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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,071	05/07/2007	Gareth Wakefield	K0181.70024US00	1417
23628 7590 09/15/2008 WOLF GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206			EXAMINER GEORGE, KONATA M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/588,071	Applicant(s) WAKEFIELD ET AL.	
	Examiner KONATA M. GEORGE	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,5-12 and 16-64 is/are rejected.
- 7) ☒ Claim(s) 2-4 and 13-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/28/06;10/26/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claims 1-64 are pending in this application.

Drawings

The drawing(s) filed under 37 CFR 1.184 or 1.152 are acknowledged by the examiner.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on July 28, 2006 and October 26, 2006 was noted and the submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

Claim Objections

Claims 28 and 29 are objected to because of the following informalities: Claim 28 appears to be reciting the same limitation twice. It states that the composition contains particles which have not been doped, then it appears to repeat the same limitation. Appropriate correction is required. Claim 29 is objected to, because is depends from an objected claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 18, applicants in the claim recite the phrase “derivatives”. Webster’s Dictionary defines a derivative as “a substance derived from, or of such composition and properties, that it may be considered as derived from, another substance by chemical change, esp. by the substitution of one or more elements or radicals”. Based on this definition it is unclear what the derivative is.

With respect to claim 52, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by “such as” and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd.

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App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 52 recites the broad recitation “particle size from 1 to 200 nm”, and the claim also recites “preferably 1 to 100nm or from 100 to 500 nm” which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-11, 16-25, 27, 30-32, 36-40, 44-52, 54-58 and 62-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Knowland et al. (WO 01/40114).

Knowland et al. teach on page 3, lines 19-20 a particle comprising titanium dioxide that has been doped with vanadium ions. Page 4, lines 20-29 teach that the dopant can be incorporated into the host particles by a baking technique with temperatures of at least 300°C, for example 600°C to 1000°C. Page 6, lines 5-8 teach that the present invention can all be in the form of a UV screening composition comprising the particles. Example 4 on page 11 teaches that the sunscreen can be in the form of an oil-in-water emulsion. Page 8, lines 20-23 teach that the composition can be in the form of suspensions or dispersions in solvents of fatty substances, or in the form of an ointment, etc. Page 6, line 18 through page 7, line 9 teach examples of suitable sunscreen agents. Page 7, lines 19-25 teach that the compositions can further

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contain additional ingredients (i.e. fillers, fatty substances, etc.) that are known in the cosmetic arts. Page 7, lines 15-18 teach that the composition can be in the form of a cream, milk of solid stick. Page 7, lines 11-14 teaches the particles are present at a concentration of about 0.5 to 10%. Page 4, lines 3-9 teach the preferred particle size, which is generally from about 1 to 200 nm and lines 18-19 teach the amount of dopant that is present on the particle. Page 6, lines 18-20 teach that the composition may be used to screen or protect a substrate from UV light. Page 6, lines 9-10 teach that the composition may be used in a wide range of applications, such as, paints, plastics, coatings, dyes, etc. Although Knowland et al. is silent with respect to an explicit teaching of where the dopant is located on the particle, it can be concluded that since the dopant is baked onto the particle, the concentration of the dopant is greater on the surface of the particle relative to the core. With respect to the methods of claims 38 and 56-58, while the method of claims 38 and 56-68 are not disclosed by the reference, the method would have been inherent. Applicants' composition comprises the same composition as the prior art; therefore, the composition of claim 1 would inherently possess the same function and also would constitute a method for reducing the concentration of one or more light stabilizers in a polymeric composition; a method of reducing the concentration of one or more veterinarally, agriculturally, and/or horticulturally active compounds in a composition; a method of increasing the shelf life of one or more veterinarally, agriculturally, and/or horticulturally active compounds in a composition or a process for increasing the effectiveness of a composition suitable for

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veterinary, agricultural, horticultural or household use as claimed by applicant. This is further evidenced by the courts decision in *Ex Parte Novitski* (26 USPQ2d 1389, 1993).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 41-43, 53 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Knowland et al. (WO 01/40114) in view of Scher et al. (US 6,149,843).

Applicant claims a particle of titanium dioxide or zinc oxide which as been doped with one or more elements such that the concentration of the dopant on the surface is greater than that at the core of the particle.

Determination of the scope and content of the prior art

(MPEP §2141.01)

Knowland et al. teach on page 3, lines 19-20 a particle comprising titanium dioxide that has been doped with vanadium ions. Page 4, lines 20-29 teach that the dopant can be incorporated into the host particles by a baking technique with temperatures of at least 300°C, for example 600°C to 1000°C. Page 6, lines 5-8 teach that the present invention can all be in the form of a UV screening composition comprising the particles. Example 4 on page 11 teaches that the sunscreen can be in the form of an oil-in-water emulsion. Page 8, lines 20-23 teach that the composition can be in the form of suspensions or dispersions in solvents of fatty substances, or in the form of an ointment, etc. Page 6, line 18 through page 7, line 9 teach examples of suitable sunscreen agents. Page 7, lines 19-25 teach that the compositions can further contain additional ingredients (i.e. fillers, fatty substances, etc.) that are known in the cosmetic arts. Page 7, lines 15-18 teach that the composition can be in the form of a cream, milk of solid stick. Page 7, lines 11-14 teaches the particles are present at a concentration of about 0.5 to 10%. Page 4, lines 3-9 teach the preferred particle size, which is generally from about 1 to 200 nm and lines 18-19 teach the amount of dopant that is present on the particle. Page 6, lines 18-20 teach that the composition may be used to screen or protect a substrate from UV light. Page 6, lines 9-10 teach that the composition may be used in a wide range of applications, such as, paints, plastics, coatings, dyes, etc.

Ascertainment of the difference between the prior art and the claims

(MPEP §2141.02)

Knowland et al. do not teach the using the particles in a composition suitable for veterinarily, agriculturally and/or horticulturally or the mole ratio of the dopant to the host metal. It is for this that Scher et al. is joined.

Scher et al. teach microcapsules of an ultraviolet light protectant (i.e. titanium dioxide or zinc oxide) in a liquid which comprises a biologically active material (col. 2, lines 61-64 and col. 3, lines 46-48). Column 3, lines 9-21 teach the biologically active material can be an herbicide, insecticide or fungicide.

Finding of prima facie obviousness

Rational and Motivation (MPEP §2142-2143)

As mentioned above, Knowland et al. do not teach using the particles in a veterinarily, agriculturally and/or horticulturally composition. This deficiency is solved by Scher et al. which teach that microcapsules of an ultraviolet light protectant can be use together with a light sensitive active agent to help prevent degradation or decomposition. Additionally, as mentioned above, page 6, lines 18-20 of Knowland et al. teach that the particles can be used to protect a substrate for UV light. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the combine teachings of Knowland et al. and Scher et al. to disclose the claimed invention.

With respect to the molar ratio, this determination would have been made through routine experimentation to achieve the desired results of the claimed invention. This is in the absence of any clear showing of unexpected results attributable to the specific mole ratio of the dopant to the host metal employed by applicant in the instant case.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 8, 10-12, 16-20, 24-29, 50-52, 54 and 55 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 9 and 11-25 of copending Application No. 10/540,649. Although the conflicting claims are not identical, they are not patentably

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distinct from each other because they overlap in scope. Both applications are directed to composition which comprises doped titanium dioxide and/or zinc oxide and an ingredient which is adversely affected by UV light in the presence of titanium dioxide and/or zinc oxide. Copending '649 claims all the instant limitation in the dependent claims. Therefore, the instant application and '649 are directed to similar subject matter.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 32-36 and 38-40 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 23-27 and 30-32 of copending Application No. 10/555,570. Although the conflicting claims are not identical, they are not patentably distinct from each other because they overlap in scope. Both applications are directed to composition which comprises doped titanium dioxide and/or zinc oxide and an ingredient which is adversely affected by UV light in the presence of titanium dioxide and/or zinc oxide. Copending '570 claims all the instant limitation in the dependent claims. Therefore, the instant application and '570 are directed to similar subject matter.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 8, 10, 16-20, 24-32, 34, 36, 50-52, 54 and 55 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-36 and 45 of copending Application No. 10/563,062.

Although the conflicting claims are not identical, they are not patentably distinct from each other because they overlap in scope. Both applications are directed to composition which comprises doped titanium dioxide and/or zinc oxide and an ingredient which is adversely affected by UV light in the presence of titanium dioxide and/or zinc oxide. Copending '062 claims all the instant limitation in the dependent claims. Therefore, the instant application and '062 are directed to similar subject matter.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

Claims 2-4 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach, suggest or make obvious a particles of titanium dioxide or zinc oxide which as been doped with one or more elements such that the concentration of the dopant on the surface that further comprises coating the particles with a discontinuous layer of a hydrophobic or hydrophilic material.

Conclusion

Claims 1, 5-12 and 16-64 are rejected.

Telephone Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Konata M. George, whose telephone number is 571-272-0613. The examiner can normally be reached from 8:00AM to 6:30PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter, can be reached at 571-272-0646. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have question on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Konata M. George/
Primary Examiner, Art Unit 1616